

1. QUALITY ASSURANCE

1. ASTM A325 AND A490 BOLTS, NUTS AND WASHERS SHALL BE TESTED BY CONTRACTOR. SUCH TESTING SHALL BE IN ADDITION TO TESTING REQUIRED OF MANUFACTURER IN PART III, K.10 OF THIS SPECIFICATION. SAMPLES, INSPECTIONS AND TESTING SHALL BE BY THE SHIPPING LOT METHOD, TAKEN FROM FASTENER COMPONENTS ACTUALLY DELIVERED TO THE CONSTRUCTION SITE.
 - a) CHEMICAL ANALYSIS (A751) IS NOT REQUIRED. PROOF LOAD TESTING (F606) SHALL BE ACCOMPLISHED FOR EACH LOT OF EACH GRADE, SIZE AND TYPE OF EACH FASTENER COMPONENT.
 - b) PROOF LOAD TESTING SHALL BE CONDUCTED ON FULL-SIZE BOLTS AND COMPONENTS, NOT ON MACHINED TEST SPECIMENS.
 - c) PROOF LOAD TESTING SHALL BE ACCOMPLISHED USING METHOD 1 (LENGTH MEASUREMENT) OF METHOD F606.
 - d) TESTING SHALL INCLUDE BOTH HARDNESS AND TENSILE STRENGTH.
 - e) ADDITIONALLY, PROVIDE ALL OTHER TESTING STIPULATED AS MANDATORY UNDER THE ASTM SPECIFICATION.
2. BOLT INSTALLATION SHALL BE IN ACCORD WITH THE PROVISIONS OF THIS SPECIFICATION AND IN NO CASE LESS THAN THE BEST INDUSTRY PRACTICE.
 - a) CONTRACTOR SHALL PROVIDE AND MAINTAIN IN GOOD CONDITION A SKIDMORE WELSH BOLT TENSION CALIBRATOR FOR OTHER DEVICE ACCEPTED BY THE ENGINEER AT EACH LOCATION WHERE HIGH-STRENGTH BOLTS ARE BEING TENSIONED. CONTRACTOR SHALL TEST REGULARLY:
 - i) BOLT, NUT, WASHER AND LUBRICANT ASSEMBLIES FOR THE ACHIEVEMENT OF PROPER TENSION; AND
 - ii) THE COMPETENCE AND UNDERSTANDING OF BOLTING CREWS FOR EACH METHOD OF TENSIONING BOLTS FOR EACH SIZE AND GRADE EMPLOYED IN THE WORK.

2. JOB CONDITIONS

1. CONSTRUCTION SEQUENCE: DESCRIPTIONS OF LIMITATIONS ON CONSTRUCTION SEQUENCE ARE INTENDED TO ASSIST CONTRACTOR IN COORDINATING THE WORK OF THE CONTRACT. DESCRIPTIONS DO NOT DESCRIBE FULLY THE LIMITATIONS GIVEN. DO NOT DESCRIBE ALL LIMITATIONS, NOR DO THEY PRECLUDE CONSTRUCTION SEQUENCES NOT CONTAINED HEREIN. WHETHER OR NOT CONTRACTOR FOLLOWS THE LIMITATIONS ON CONSTRUCTION SEQUENCE DESCRIBED HEREIN, AND UNTIL SUCH TIME AS THE STRUCTURAL WORK IS COMPLETED, CONTRACTOR REMAINS FULLY RESPONSIBLE FOR BOTH THE STABILITY AND THE SAFETY OF THE WORK. ADHERENCE TO THE LIMITATIONS DESCRIBED HEREIN DOES NOT RELIEVE CONTRACTOR FROM THAT RESPONSIBILITY.

K. MATERIALS

1. STRUCTURAL STEEL, FURNISHED FOR EACH LOCATION SHALL PROVIDE THE MINIMUM YIELD POINT GIVEN IN THE CONTRACT DRAWINGS. SHALL CONFORM TO THE APPLICABLE ASTM STEEL SPECIFICATION, SHALL MEET THE REQUIREMENTS OF BUILDING CODE, SHALL BE SUITABLE FOR USE IN WELDED STRUCTURES AND SHALL MEET THE REQUIREMENTS BOTH OF THE CONTRACT DRAWINGS AND OF THIS SPECIFICATION. ALL MATERIAL SHALL BE NEW AND OF BEST COMMERCIAL QUALITY. STEELS PRODUCED TO MODIFIED ASTM SPECIFICATIONS SHALL NOT BE USED WITHOUT WRITTEN ACCEPTANCE. EXCEPT WHERE SPECIFIC PRODUCTS ARE GIVEN IN THE CONTRACT DRAWINGS OR IN THIS SPECIFICATION, STRUCTURAL STEEL USED IN THE WORK MAY BE CHOSEN BY CONTRACTOR FROM THE APPLICABLE SPECIFICATIONS LISTED IN AISC SPECIFICATION AND ACCEPTED BY BOTH BUILDING CODE AND BY THE ENGINEER.
2. CONTRACTOR, IN ORDERING MATERIALS FROM MANUFACTURERS AND VENDORS, SHALL SPECIFY THE MANUFACTURER OR VENDOR, UNLESS THE INTENDED USE OF THE MATERIAL IS FOR THE USE OF PURCHASED MATERIALS. EXAMPLES OF END USE INCLUDE:
 - a) TRUSS CHORDS AND WEB MEMBERS
 - b) BUILT-UP MEMBER FLANGES AND WEBS
 - c) COLUMNS
 - d) TENSION MEMBERS
 - e) ELEMENTS OF RIGID FRAMES
 - f) ALL ELEMENTS IDENTIFIED SPECIFICALLY IN DRAWINGS
 - g) ALL SPECIAL AND SENSITIVE AREAS OF THE WORKPARTICULAR CARE SHALL BE TAKEN TO IDENTIFY MATERIALS.
 - i) STRESSED IN TENSION TRANSVERSE TO THE GRAIN (RIGID FRAMES, TRUSSES, ETC.)
 - ii) IT IS THE INTENT OF THESE PROVISIONS TO ASSIST CONTRACTOR IN THE SELECTION OF MATERIALS BEST SUITED FOR THE INTENDED PURPOSE.
3. UNLESS NOTED SPECIFICALLY AS NOT CARRYING TENSILE LOADS OR TENSILE AS BOLTED, ALL STEEL AND FASTENERS SHALL BE USED IN THE WORK SHALL BE SUITABLE FOR USE AS TENSION MEMBERS, CONNECTED BY WELDING.
4. SHOP AND FIELD-APPLIED PAINT SHALL BE PROVIDED WHERE DESIGNATED IN THE CONTRACT DRAWINGS, SPECIFIED HEREIN, AND WHERE PROVIDED BY BUILDING CODE. PAINT MATERIAL SHALL BE FULLY COMPATIBLE WITH FIREPROOFING AND OTHER MATERIALS IN CONTACT WITH THE PAINT AND SHALL BE SELECTED FROM THE FOLLOWING:
 - a) SHOP PRIMER AND FIELD TOUCH-UP
 - i) THUNDER 90-99, THUNDER CO., INC.
 - ii) CARBOLINE GP-818, CARBOLINE INC.
 - iii) DUPONT 681-ED, DUPONT DELOE, DUPONT CO.
 - iv) OTHER WHERE ACCEPTED
 - b) ZINC-RICH
 - i) THUNDER 90-96, THUNDER CO., INC.
 - ii) CARBOLINE CARBOLINE 11 MS, CARBOLINE INC.
 - iii) GARDEN 147 XB, DUPONT CO.
 - iv) OTHER CLASS A OR BETTER COATING, AS DEFINED BY AISC, WHERE ACCEPTED
 - c) ALUMINUM PASTE VARNISH SHALL CONSIST OF 2 LBS OF ALUMINUM PASTE PIGMENT (ASTM D 951-66, TYPE 2, CLASS B) PER GALLON (120 G PER LITER) OF ALUMINUM VARNISH (FEDERAL SPECIFICATION TT-V-8, TYPE II).
5. GALVANIZED STEEL: WHERE REQUIRED TO BE GALVANIZED, MEMBERS SHALL BE HOT-DIPPED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123 OR TO ASTM A153 (TABLE 1), AS APPLICABLE. GALVANIZING SHALL BE DONE AT 1.0 OZ. PER SQUARE FOOT (500 G/M²) OF SURFACE.
6. GALVANIZING TOUCH-UP: PROVIDE ORGANIC, ZINC-RICH PAINT:
 - a) THUNDER 90-97
 - b) CARBOLINE 859, CARBOLINE INC.
 - c) PPG INDUSTRIES CO. 97-679, PPG INDUSTRIES
 - d) OTHER WHERE ACCEPTED

7. WELDING MATERIALS SHALL BE AS REQUIRED BY AMS FOR THE CONDITIONS OF INTENDED USE AND FOR THE METAL BEING WELDED. WELDING MATERIALS SHALL CONFORM TO AMS A5.1, A5.5, A5.17, A5.18, A5.20 AND A5.21 AND SHALL BE E7018, E7018-C1, E7018-C2, E7018-C3, E7018-C4, E7018-C5, E7018-C6, E7018-C7, E7018-C8, E7018-C9, E7018-C10, E7018-C11, E7018-C12, E7018-C13, E7018-C14, E7018-C15, E7018-C16, E7018-C17, E7018-C18, E7018-C19, E7018-C20, E7018-C21, E7018-C22, E7018-C23, E7018-C24, E7018-C25, E7018-C26, E7018-C27, E7018-C28, E7018-C29, E7018-C30, E7018-C31, E7018-C32, E7018-C33, E7018-C34, E7018-C35, E7018-C36, E7018-C37, E7018-C38, E7018-C39, E7018-C40, E7018-C41, E7018-C42, E7018-C43, E7018-C44, E7018-C45, E7018-C46, E7018-C47, E7018-C48, E7018-C49, E7018-C50, E7018-C51, E7018-C52, E7018-C53, E7018-C54, E7018-C55, E7018-C56, E7018-C57, E7018-C58, E7018-C59, E7018-C60, E7018-C61, E7018-C62, E7018-C63, E7018-C64, E7018-C65, E7018-C66, E7018-C67, E7018-C68, E7018-C69, E7018-C70, E7018-C71, E7018-C72, E7018-C73, E7018-C74, E7018-C75, E7018-C76, E7018-C77, E7018-C78, E7018-C79, E7018-C80, E7018-C81, E7018-C82, E7018-C83, E7018-C84, E7018-C85, E7018-C86, E7018-C87, E7018-C88, E7018-C89, E7018-C90, E7018-C91, E7018-C92, E7018-C93, E7018-C94, E7018-C95, E7018-C96, E7018-C97, E7018-C98, E7018-C99, E7018-C100.
8. SHIELDING GAS SHALL BE OF A WELDING GRADE HAVING A Dew Point of -40°F (-40°C) OR LOWER.
9. STUD SHEAR CONNECTORS AND CONCRETE ANCHOR STUDS: MATERIAL AND EQUIPMENT FOR WELDED STUDS, STUD SHEAR CONNECTORS AND CONCRETE ANCHOR STUDS SHALL CONFORM TO AISC D1.1.
10. HIGH TENSILE BOLTS, NUTS AND WASHERS SHALL CONFORM TO THE APPLICABLE ASTM SPECIFICATION AS FOLLOWS:

BOLTS	NUTS	WASHERS
ASTM A325, TYPE 1	ASTM A325, TYPE 1	ASTM A325, TYPE 1
ASTM A490, TYPE 1	ASTM A490, TYPE 1	ASTM A490, TYPE 1

ALL FASTENER COMPONENTS SHALL BEAR THE MANUFACTURER'S MARK. NUTS SHALL BEAR THE DN OR H SYMBOL AS APPLICABLE. ALL BOLTS, NUTS AND WASHERS SHALL BE COLD FORGED; BOLTS AND NUTS SHALL HAVE ROLLED THREADS. NEITHER HOT FORGED BOLTS OR NUTS NOR CUT THREADS MAY BE USED IN THE WORK.

- a) IN ADDITION TO THE MANDATORY TESTING PROVIDED IN THE ASTM SPECIFICATION, PROOF LOAD TESTING (F606), CHEMICAL ANALYSIS (A751) AND CERTIFICATION SHALL BE REQUIRED OF MANUFACTURER, FOR GALVANIZED BOLTS, NUTS AND WASHERS. MANUFACTURER'S CERTIFICATION SHALL INCLUDE THE RESULTS OF THE ROTATIONAL-CAPACITY TESTS AS WELL AS THE RESULTS OF THE ZINC THICKNESS MEASUREMENTS, EXCEPT FOR THE ROTATIONAL-CAPACITY TESTS OF GALVANIZED BOLT, NUT AND WASHER ASSEMBLIES, WHICH SHALL BE PERFORMED IN ACCORD WITH THE SHIPPING LOT METHOD. ALL TESTING AND ANALYSIS SHALL BE CONDUCTED IN ACCORD WITH THE PRODUCTION LOT METHOD. TESTING SHALL BE COMPLETED FOR EACH GRADE OF EACH TYPE OF EACH SIZE OF FASTENER. FASTENER COMPONENTS NOT IN FULL CONFORMANCE TO THE APPROPRIATE ASTM SPECIFICATION SHALL NOT BE SHIPPED TO THE WORK.
- b) PROOF LOAD TESTING SHALL BE CONDUCTED ON FULL-SIZE BOLTS AND COMPONENTS NOT ON MACHINED TEST SPECIMENS.
- c) PROOF LOAD TESTING SHALL BE ACCOMPLISHED USING METHOD 1 (LENGTH MEASUREMENT) OF METHOD F606.
- d) TESTING SHALL INCLUDE BOTH HARDNESS AND TENSILE STRENGTH.

- b) BOLTS, NUTS AND WASHERS SHALL BE MANUFACTURED BY A MEMBER OF THE INDUSTRIAL FASTENERS INSTITUTE AND SHALL BE PURCHASED DIRECTLY FROM THE MANUFACTURER AND NOT FROM A SECONDARY SOURCE.
- c) ACCEPTED MANUFACTURERS ARE:
 - i) LARSEN ERIC SCREW CORP.
 - ii) INCON FASTENER
 - iii) OTHER WHERE ACCEPTED
- d) DOUBLE NUTS SHALL BE USED FOR ALL FASTENERS DESIGNATED AS PINGER TIGHT.
- e) GALVANIZED BOLTS, NUTS, WASHERS, OTTS AND INSERTS, AS APPLICABLE, CONFORMING TO ASTM B695, CLASS 5, SHALL BE USED AT ALL SURFACES EXPOSED TO AMBIENT TEMPERATURES. GALVANIZING SHALL BE UNDERTAKEN ONLY ON AISC, TYPE 1 BOLT AND ON ASTM A553 OR NUTS.
- f) GALVANIZED BOLTS SHALL BE SQUARE, SMOOTH, AND SHALL BE SUPPLIED TO PROVIDE FULL BEARING SURFACES. PROVIDE FOR ALL SLOPES OF 1:20 AND LARGER.
- g) THE DIAMETER OF HOLES IN SPECIAL, BEVELED AND NOTCHED MEMBERS SHALL NOT EXCEED 1 1/8" (31.8) MM, WHERE THE NOMINAL BOLT DIAMETER.
- h) THREAD LUBRICATION SHALL BE F-600000 140 STP MAX (LUBRICANT) FOR GALVANIZED FASTENERS; OR OTHER ACCEPTED LUBRICANT.
- i) BOLT TENSION INDICATING DEVICES SHALL BE IDENTICAL-TENSION INDICATING DEVICES (OTI) OR TENSION CONTROL FASTENERS (TCF).

- a) IDENTICAL-TENSION INDICATING DEVICES SHALL BE OF IDENTICAL MANUFACTURE AND SHALL CONFORM TO ACCEPTED MANUFACTURERS ARE J & M TURNER, INC. BOTH FACT, OR OTHER ACCEPTED BY ENGINEER. PROVIDE EPOXY COATED, GALVANIZED (ASTM B695, CLASS 5) BOLTS FOR SURFACES THAT CONTAIN ASTM A553 STEELS WHICH ARE EXPOSED TO AMBIENT TEMPERATURES.
- b) TENSION CONTROL FASTENERS SHALL CONFORM TO THE APPLICABLE PROVISIONS OF ASTM A153 TYPE 1 OR TO ASTM A153 TYPE 2, BOTH FACT, OR OTHER ACCEPTED BY ENGINEER. PROVIDE EPOXY COATED, GALVANIZED (ASTM B695, CLASS 5) BOLTS FOR SURFACES THAT CONTAIN ASTM A553 STEELS WHICH ARE EXPOSED TO AMBIENT TEMPERATURES.

11. REFERRED ANCHOR BOLTS SHALL BE ASTM A490 DEFERRED BOLTS PREPARED FOR STUD WELDING AS MANUFACTURED BY ERICO JONES, OR BY NELSON STUD DIVISION OF TWI, OR OTHER ACCEPTED ANCHOR BAR. PROVIDE 1 1/2 INCH (38.1) DIA. 16 INCHES (406.4) LONG, UNLESS OTHERWISE GIVEN IN THE DRAWINGS.
12. HILLED SURFACES: COAT WITH BLUE LACQUER 1711 BY VANDERKOP PAINT CO., VANDERKOP BY MAGNUS CHEMICAL CO., OR N-2658 BLUE LACQUER BY D.S. STEEL CORP.
13. DRILLED-IN ANCHORS SHALL BE WEDGE-TYPE, CAPSULE-TYPE SHALL NOT BE PERMITTED. DRILLED-IN ANCHORS DESIGNATED IN THE CONTRACT DRAWINGS AS CARRYING A SPECIFIC TENSILE LOAD SHALL BE TENSILE-TYPE.
14. WEDGE-TYPE: FULLY PARALLOL BY FULLY PASTER. WEDGE ANCHORS BY 174 RASPERED HEAD, HSB PAUL BOLT BY MILIT. PAUL STUD BY THE PAUL COMPANY, OR OTHER WHERE ACCEPTED.
15. MATERIAL FOR WEDGE-TYPE ANCHORS SHALL CONFORM TO SAR-7429, GRADE 5 OR TO ASTM A325.
16. TENSILE-TYPE: MAKE BOLT BY DRILLING DEVICE, LTD., OR OTHER ACCEPTED ANCHOR.
17. MATERIAL FOR TENSILE-TYPE SHALL CONFORM TO ASTM A193 WITH NUTS AND WASHERS AS SPECIFIED HEREIN FOR ASTM A325 BOLTS.
18. GALVANIZING SHALL CONFORM TO ASTM B695, GRADE 50 OR TO ASTM B633.
19. STAINLESS STEEL FOR STUDS AND WASHERS SHALL CONFORM TO A193 GRADE 304 OF GRADE 316 AND TO ASTM A193, GROUP 1 OR GROUP 2, CORRELATION FOR WEDGE-TYPE ANCHORS. NUTS SHALL BE OF STAINLESS STEEL CONFORMING TO ASTM F594.

15. ANCHOR BOLTS: MAY BE OF UNCOATED STEEL UNLESS OTHERWISE REQUIRED BY THE CONTRACT DRAWINGS, BY BUILDING CODE OR BY GOVERNMENTAL AUTHORITIES HAVING JURISDICTION. UNLESS OTHERWISE PROVIDED IN THE CONTRACT DRAWINGS PROVIDE 3/4 INCH (19.1) DIA. OR LARGER.

- a) UNLESS OTHERWISE GIVEN, PROVIDE AS FOLLOWS:
 - i) BOLT MATERIAL CONFORMING TO ASTM A325, GRADE 42.
 - ii) TWO HEAVY HEX NUTS AS SPECIFIED FOR ASTM A325.
 - iii) 3 X 3 X 3/8 (75X75X10 MM), FY 36 (235 MPa) PLATE WASHER.
- b) WHERE DESIGNATED A325, PROVIDE AS FOLLOWS:
 - i) BOLT MATERIAL CONFORMING TO ASTM A325 OR TO ASTM A490.
 - ii) TWO HEAVY HEX NUTS AS SPECIFIED FOR ASTM A325.
 - iii) 3 X 3 X 1/2 (75X75X12 MM), FY 50 (345 MPa) PLATE WASHER.

16. THREAD LOCKING COMPOUND SHALL BE LOC-TITE 242 OR ORI-LOC 205, AS APPROPRIATE, BY LOC-TITE CORPORATION, PRO-LOCK NUT BY FEL-PRO CORPORATION OR OTHER ACCEPTED COMPOUND.
17. STEEL DECK SUPPORT SHELVES: PROVIDE ANGLES OF 5/16 INCH (8 MM) MINIMUM THICKNESS AND 3 INCH (75 MM) MINIMUM WIDTH EXCEPT WHERE DIFFERENT SHAPES OR DIMENSIONS ARE SPECIFIED.
18. GRATING SHALL BE PROPORTIONED TO RESIST SAFELY THE SUPERIMPOSED LOADS.

- a) FOR PEDESTRIAN LOADING PROVIDE GRIP STRUT GALVANIZED, PROPORTIONED TO CARRY SAFELY A LIVE LOAD OF NOT LESS THAN 100 PSF (5 KPa).

L. FABRICATION

1. FINISHING SHALL MEAN MILLED TO A20 B30 OR SMOOTHER, UNLESS ANOTHER FINISHING METHOD IS BOTH DESIGNATED IN SHOP DRAWINGS AND ACCEPTED. FINISHED SURFACES SHALL BE PROTECTED BY A CORROSION INHIBITING SUBSTANCE AS PROVIDED HEREIN. FINISH CONTACT SURFACES OF BASE PLATES, COLUMN SPICES, WHERE INDICATED "FIT TO BEAR", AND AT OTHER LOCATIONS WHERE INDICATED IN THE CONTRACT DRAWINGS.
2. GAS CUTTING: GAS CUTTING, INCLUDING MISCELLANEOUS CUTS, COPIES, CUTS FOR WELD ACCESS AND THE LIKE, SHALL PROVIDE SMOOTH, UNIFORM, MOUND-LIKE SURFACES AND SHALL ACHIEVE A 1000 MICHON SURFACE FINISHNESS OR BETTER AS DEFINED BY AISC 348.1. EXCEPT WHERE ACCEPTED, GAS CUTTING SHALL BE MACHINE GUIDED. CUTTING BY HAND-GUIDED TOOLS WILL REQUIRE GRINDING. PROVIDE 1/2 INCH (13 MM) MINIMUM RADIUS CUT AT ALL RE-ENTRANT CORNERS EXCEPT WHERE A SMALLER OR LARGER RADIUS FOR SPECIFIC DETAILS IS SHOWN OR NOTED IN THE CONTRACT DRAWINGS OR OTHERWISE PROPOSED BY CONTRACTOR AND ACCEPTED IN SHOP DRAWINGS. GAS CUT SURFACES SHALL BE MADE UNIFORM AND NOTCH-FREE BY CHIPPING, PLANING, WELDING AND GRINDING AS REQUIRED, AND SHALL BE VERIFIED BY CONTRACTOR BY FULL VISUAL INSPECTION. WHERE HAND-HELD CUTTING TOOLS ARE USED, AND WHERE REQUIRED BY AISC SPECIFICATION, CONTRACTOR SHALL PROVIDE 100% INSPECTION BY DYE-PENETRANT OR BY MAGNETIC PARTICLE.
3. GALVANIZED MEMBERS: GAS-CUT SURFACES AT RE-ENTRANT CORNERS SHALL BE GRIND TO BRIGHT METAL AND TESTED BY DYE-PENETRANT OR MAGNETIC PARTICLE TESTING PRIOR TO GALVANIZING AND VERIFIED BY CONTRACTOR BY FULL VISUAL INSPECTION AFTER GALVANIZING.
4. STRAIGHTENING: FABRICATED MATERIALS CONTAINING SHARP BENDS OR BENDS SHALL BE REJECTED. MATERIAL STRAIGHTENED PRIOR TO FABRICATION SHALL BE EXAMINED CAREFULLY FOR SIGNS OF DISTRESS AND FOR OTHER DEFECTS BEFORE BEING PLACED IN FABRICATION. DISTRESS OR OTHER DEFECTS IN DEFECTIVE MATERIAL SHALL NOT BE USED IN THE WORK. STRAIGHTENING BY THE USE OF PROPERLY CONTROLLED HEAT SHALL BE PERMITTED IN CASES WHERE STRAIGHTENING IN HEAT STRAIGHTENING, USING EQUIPMENT AND TECHNIQUES IN ACCORD WITH WRITTEN PROCEDURE DOCUMENTS AND APPLICABLE DETAIL SPECIFICATIONS PREPARED BY THE FABRICATOR AND ACCEPTED BY ENGINEER.
5. GRINDING: SHARP CORNERS, PROJECTIONS, AND SIMILAR FORM OR SHARP SURFACES OR EDGES SHALL BE EASED AND SMOOTHED BY GRINDING SO AS TO PROVIDE NOTCH-FREE SURFACES.
6. PREHEAT: WELDING SHALL BE PERFORMED ON MATERIAL PREHEATED TO A TEMPERATURE ABOVE THE DESIGN. PREHEAT FOR WELDING SHALL BE SOAKED PREHEAT AND SHALL BE VERIFIED BY HEAT SENSITIVE PAPER (TEMPERATURE) OF OTHER ACCEPTED MEANS.
7. WELDING MATERIALS AND PROCESSES SHALL BE SELECTED FROM THOSE NOTED HEREIN AND SHALL CONFORM TO ACCEPTED WELDING PROCEDURE SPECIFICATIONS. WELDING MATERIALS SHALL BE FRESH AND NEW. WELDING ELECTRODES OR FLUX CONTAMINATED BY OILY SUBSTANCES OR MOISTURE SHALL NOT BE USED AND SHALL BE REMOVED PROMPTLY FROM THE WORK. LOW OPENING OF HERMETICALLY SEALED CONTAINERS SHALL BE STORED IN ELECTRIC HEATING OVEN AT 250°F (121°C) MINIMUM. ELECTRODES OR FLUX WHICH HAVE BEEN DAMAGED OR CONTAMINATED SHALL BE PROVIDED PROMPTLY FROM THE WORK.
8. TACK WELDS: EXERCISE THE SAME DEGREE OF CONTROL IN MAKING TACK WELDS AS REQUIRED FOR STRUCTURAL WELDS. INCLUDING PROVISION OF PREHEAT AND POSTHEAT APPROPRIATE TO THE BASEMETALS JOINED. TACK WELDS WHICH CRACK SHALL BE CUT OR GRIND AND DAMAGED BASE METAL REPAIRED. REMOVE AND GRIND SMOOTH TACK WELDS NOT INCORPORATED INTO PERMANENT STRUCTURAL WELDS.
9. ARC STIKES: STRAY ARCING BETWEEN ELECTRODES OR OTHER PORTIONS OF THE WELDING SYSTEM AND BASE METAL LOCATIONS OUTSIDE STRUCTURAL WELDS SHALL BE AVOIDED TO THE MAXIMUM EXTENT PRACTICABLE. IN THOSE LOCATIONS WHERE ARC STIKES DO OCCUR, THE AFFECTED BASE METAL SHALL BE GRIND SMOOTH, OR OTHERWISE REPAIRED, TO REMOVE THE EFFECTS OF THE ARC STIKES AND ENSURE CONTINUING SOUNDNESS OF THE BASE METAL.
10. SHOP BOLTING WITH ASTM A325 OR ASTM A490 BOLTS SHALL CONFORM TO APPLICABLE PROVISIONS OF THE AISC SPECIFICATION AND SPECIFICATIONS FOR STRUCTURAL JOINTS USING ASTM A325 OR A490 BOLTS EXCEPT THAT ALL BOLTING PROVISIONS SET FORTH HEREIN SHALL APPLY TO HIGH-STRENGTH SHOP BOLTING.
11. DRAINAGE HOLES: PROVIDE HOLLOW TUBULAR, BOX AND OTHER MEMBERS WITH EFFECTIVE DRAINAGE HOLES EXCEPT WHERE MEMBERS ARE SEALED TIGHT AT CONTRACTOR'S OPTION OR IN ACCORD WITH NOTES AND DETAILS INCLUDED IN THE CONTRACT DRAWINGS. CONTRACTOR IS FULLY RESPONSIBLE TO PROVIDE STEELWORK FREE OF ENTRAPPED WATER AT THE COMPLETION OF THE CONTRACT.

- WHERE ONE END OF A GALVANIZED TUBE IS SPECIFIED TO BE SEALED, PROVIDE A 1 1/16 INCH DIA. HOLE AT THE OPPOSITE END TO PERMIT PRESSURE RELIEF DURING THE HOT DIP PROCESS. WHERE BOTH ENDS ARE SEALED, WELD ONE END PLATE ON THE TUBE AFTER THE GALVANIZING PROCESS.